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Reply to Office Action of September 19, 2005

REMARKS

In the September 19, 2005 Final Office Action, all of the pending claims (1-17 and 19-27) were rejected. This Response amends claims 1-8, 10-12, 14-17, 20, 21, and 23 to clarify certain aspects of the recited inventions. No new matter has been introduced. After entry of the foregoing amendments, claims 1-17 and 19-27 (26 total claims; 5 independent claims; no additional claim fees due) remain pending in the application. Reconsideration of the application is respectfully requested in view of the above amendments and the following remarks.

Finality of the Office Action

The Final Office Action states that Applicant's last amendment (filed June 24, 2005) necessitated the new grounds of rejection. Applicant disagrees with this conclusion and questions the finality of the present Office Action. Applicant respectfully reminds the Office that all of the prior art cited against the claims in the Final Office Action has been of record since at least as early as August 2, 2004, and that the claims have been rejected over various combinations of these prior art references in the Office Action dated August 2, 2004, the Office Action dated March 24, 2005, and the Final Office Action dated September 19, 2005.

The Office Action dated August 2, 2004 rejected all of the then-pending claims over one or more of the following prior art references: Irvin, Hosford, Weiss, Gross, and Dent. The amendments contained in Applicant's Response dated October 26, 2004 (only claims 11-14 were amended) merely clarified that the recited "packets" are "data packets." The rejections contained in the March 24, 2005 Office Action merely cited different combinations of the previously cited prior art (the Irvin, Hosford, Weiss, Gross, and Dent references). The amendments contained in Applicant's Response dated June 24, 2005 (only claims 1, 7, 11, 12, 16, and 23 were amended) merely clarified certain aspects of the amended claims as discussed previously during prosecution of this application, and the amendments to claims 1, 7, 11, 12, 16, and 23 did not introduce any previously unclaimed subject matter that necessitated additional searching. In view of the extended prosecution history of this case and the repeated application of the same prior art against the claims, Applicant respectfully requests the withdrawal of the finality of the Final Office Action (unless all of the pending claims are deemed allowable).

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§102 Rejection

Claims 1-7, 16, 19, and 22-27 stand rejected under 35 U.S.C. §102(b) as being anticipated by Dent et al., USPN 5,771,288 (hereinafter "Dent"). Applicant traverses this rejection. In particular, page 2 of the Final Office Action alleges that "Dent teaches a method of adding packet-ordering information to a plurality of data packets." This characterization of Dent and, therefore, the application of Dent against claims 1-7, 16, 19, and 22-27, is improper.

Dent discloses a CDMA system that employs a pseudorandomly selected scrambling mask for all mobile stations in a cell (Dent, at Abstract). This scrambling mask is utilized to add further protection and security to the normal encoding scheme utilized by the CDMA system. The receiver component uses the same scrambling mask as the transmitter component in order to descramble the transmitted data (Dent, at Column 8, Lines 19-21). Notably, the Dent system assigns different scrambling masks to different information signals (Dent, at Column 8, Lines 13-17). Dent also discloses a technique whereby scrambling masks are ordered based upon the signal strength of their associated, coded information signals. This technique allows the Dent system to decode stronger signals from a composite signal before decoding weaker signals from the composite signal (Dent, at Column 14, Lines 52-65).

Importantly, Dent contains no teaching or suggestion of masking data packets on a packet-by-packet basis, where data packets are masked one at a time using one of a plurality of different ordering masks, as recited in Applicant's independent claim 1. Rather, once a scrambling mask has been pseudorandomly selected by the Dent system, it is utilized to generally mask the transmitted signal. Dent simply does not disclose or suggest the ordered application of different scrambling masks to individual data packets as required by Applicant's claim 1. Although the scrambling masks taught by Dent can be "ordered" based on the signal strength of a respectively assigned coded information signal, the scrambling masks do not add packet ordering information to the coded information signal, nor is such ordering associated with data packets that may be utilized to convey the coded information signal. For at least these reasons, Dent does not anticipate the invention recited in independent claim 1. For at least the same reasons, Dent does not anticipate the invention recited in claims 2-6, which all depend from claim 1.

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Moreover, regarding dependent claim 3, Dent neither teaches nor discloses a receiver having knowledge of the plurality of ordering masks and the corresponding order for the masks, or a receiver that can discern a relative packet order using the plurality of ordering masks. As discussed above, the scrambling/descrambling masks taught by Dent do not correspond to individual packets in the signal. Rather, the receiver in the Dent system applies the descrambling mask to the received signal as a whole (or to a component signal as a whole). Thus, for at least these additional reasons, Dent does not anticipate the invention of claim 3.

Regarding independent claim 7, Dent does not teach or suggest the recited step of "applying at least one packet ordering mask to the received packet in a known order from a list of packet ordering masks to find a current packet ordering mask that was previously used to mask the received packet, the list of packet ordering masks having the known order" (emphasis added). The Office Action cited Dent at Column 14, Lines 52-65 in support of this conclusion. This excerpt of Dent, however, relates to the selection of a specific scrambling mask that is used to determine the order in which component signals from a composite signal are decoded, based upon the relative strength of the component signals. As discussed above, the scrambling mask in the Dent system is applied on a signal-by-signal basis, and the signal-strength based scrambling masks described at Column 14, Lines 52-65 of Dent are not packet-ordering masks as recited in claim 7. For at least these reasons, Dent does not anticipate the invention recited in independent claim 7.

Regarding independent claim 16, Dent does not teach or suggest "a mask store comprising a plurality of packet ordering masks having a known order, the known order representing an order of transmission of a plurality of packets" (emphasis added). Moreover, Dent does not teach or suggest an unmasking device that is "configured to unmask received packets by applying the packet ordering masks, one at a time and in the known order on a packet-by-packet basis, to the received packets." Again, the scrambling/descrambling masks in the Dent system are applied to signals as a whole, and the different masks in the Dent system are not applied one at a time to individual packets. In other words, the masks in the Dent system are not packet ordering masks as recited in claim 16. For at least these reasons, Dent does not anticipate the invention recited in independent claim 16. For at least the same reasons, Dent does not anticipate the invention recited in claims 19 and 22, which depend from claim 16.

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Regarding independent claim 23, Dent does not teach or suggest "a mask store comprising a plurality of packet ordering masks having a known order, said known order representing an order of transmission of a plurality of packets" (emphasis added). Moreover, Dent does not teach or suggest a masking device that applies "the packet ordering masks, one at a time and in the known order on a packet-by-packet basis, to mask each of the formatted packets to which the error codes have been applied." Again, the scrambling/descrambling masks in the Dent system are applied to signals as a whole, and the different masks in the Dent system are not applied one at a time to individual packets. In other words, the masks in the Dent system are not packet ordering masks as recited in claim 23. For at least these reasons, Dent does not anticipate the invention recited in independent claim 23. For at least the same reasons, Dent does not anticipate the invention recited in claims 24-27, which depend from claim 23.

In conclusion, Dent does not anticipate any of claims 1-7, 16, 19, and 22-27, and Applicant requests the withdrawal of the §102 rejection of those claims.

§103 Rejections

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify a reference or to combine the teachings of multiple references. Second, there must be a reasonable expectation of success. Third, the prior art must teach or suggest all of the recited claim limitations. Of course, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. Applicant respectfully submits that the Examiner has not met all of the above criteria in connection with any of the following §103 rejections.

Claims 16, 17, 19, 22, and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Irvin et al., USPN 5,862,160 (hereinafter "Irvin") in view of Dent. Applicant traverses this rejection.

Irvin generally discloses a communication system that applies masks to an encoded input signal. The mask to be applied to the encoded input signal is selected in accordance with a secondary signal that is to be transmitted along with the encoded input signal. At the receiver side, the same mask is used to obtain the original encoded input signal, along with the

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secondary signal. The Final Office Action correctly concludes that Irvin does not disclose a number of limitations recited in independent claim 16, and that Irvin does not disclose a number of limitations recited in independent claim 23.

The Final Office Action cites Dent as a reference that allegedly addresses the shortcomings of Irvin. For the reasons discussed above in connection with the §102 rejections of independent claims 16 and 23, however, Dent neither teaches nor suggests the additional limitations as necessary to support this rejection. Notably, the scrambling/descrambling masks in the Dent system are applied to signals as a whole, and the different masks in the Dent system are not applied one at a time to individual packets. In other words, the masks in the Dent system are not packet ordering masks as recited in claims 16 and 23. Consequently, the proposed combination of Irvin and Dent does not teach or suggest all of the limitations of independent claims 16 and 23. For at least the same reasons, the proposed combination of Irvin and Dent does not teach or suggest all of the limitations of claims 17, 19, and 22 (which all depend from claim 16).

For at least the above reasons, claims 16, 17, 19, 22, and 23 are not unpatentable over the proposed combination of Irvin in view of Dent. Therefore, Applicant requests the withdrawal of the §103 rejection of claims 16, 17, 19, 22, and 23.

Claims 1-4, 6, 16, 17, 19-21, and 23-26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hosford et al., USPN 5,966,450 (hereinafter "Hosford") in view of Dent. Applicant traverses this rejection.

Hosford generally discloses a communication system that encrypts frames of data by combining each of the frames with a mask that varies from frame to frame (Hosford, at Abstract). The masks are pseudorandomly and independently generated in a synchronized manner at both the transmitter and receiver, which provides added security for the encryption technique. The Final Office Action correctly concludes that Hosford does not disclose a number of limitations recited in independent claim 1, that Hosford does not disclose a number of limitations recited in independent claim 16, and that Hosford does not disclose a number of limitations recited in independent claim 23.

The Final Office Action cites Dent as a reference that allegedly addresses the shortcomings of Hosford. For the reasons discussed above in connection with the §102

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rejections of independent claims 1, 16, and 23, however, Dent neither teaches nor suggests the additional limitations as necessary to support this rejection. Notably, the scrambling/descrambling masks in the Dent system are applied to signals as a whole, and the different masks in the Dent system are not applied one at a time to individual packets. In other words, the masks in the Dent system are not packet ordering masks as recited in independent claims 1, 16 and 23. Consequently, the proposed combination of Hosford and Dent does not teach or suggest all of the limitations of independent claims 1, 16, and 23. For at least the same reasons, the proposed combination of Hosford and Dent does not teach or suggest all of the limitations of claims 2-4 and 6 (which depend from claim 1), claims 17 and 19-21 (which variously depend from claim 16), and claims 24-26, (which depend from claim 23).

Regarding dependent claim 6, moreover, Applicant respectfully disagrees with the unsupported conclusion that it "is inherent that Hosford's systems will therefore have a sufficient number of masks so that the receiver can discern the proper order of the packets" (Final Office Action at pages 11-12). In this regard, the Hosford system is not directed to the ordering of packets and the application of packet ordering masks to received packets in the manner recited in claim 6. With this in mind, Applicant finds it curious that the Final Office Action would conclude that such inherency exists. Should the Examiner decide to maintain the rejection of claim 6, Applicant respectfully requests a further explanation of the inherency aspect of the rejection.

Additionally, Applicant submits that a *prima facie* case of obviousness has not been established with respect to claims 1-4, 6, 16, 17, 19-21, and 23-26 because there is no motivation to combine Hosford with Dent. As previously mentioned, Dent discloses application of scrambling masks on a signal-by-signal basis. In contrast, Hosford is directed to frame counter based decryption scheme that combines a variable mask generated from a frame counter with an encrypted data frame. Applicant submits that Hosford teaches away from Dent because each reference is directed to an entirely different method of encryption/decryption.

For at least the above reasons, claims 1-4, 6, 16, 17, 19-21, and 23-26 are not unpatentable over the proposed combination of Hosford in view of Dent. Therefore, Applicant requests the withdrawal of the §103 rejection of claims 1-4, 6, 16, 17, 19-21, and 23-26.

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Claims 5 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hosford in view of Dent and further in view of Weiss, USPN 4,754,482 (hereinafter "Weiss"). Applicant traverses this rejection.

Claim 5 depends from independent claim 1, and claim 27 depends from independent claim 23. Claims 1 and 23 were rejected under §103 as being unpatentable over the combination of Hosford and Dent (see the immediately preceding discussion). Consequently, for at least the same reasons discussed above, claims 5 and 27 are not unpatentable over Hosford in view of Dent and further in view of Weiss.

Claims 7-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Weiss in view of Dent and further in view of Gross et al., USPN 5,761,431 (hereinafter "Gross"). Applicant traverses this rejection.

Weiss generally discloses an encryption technique that appends an error detection code to each encrypted data block. A given error detection code is generated from the corresponding encrypted data block and a unique sequence number. The encrypted data blocks and their appended error detection codes are transmitted from the transmitter to the receiver. The receiver has an independent local counter that is used to derive sequence numbers that are synchronized with the sequence numbers generated by the transmitter. In this manner, the receiver can reverse the processing performed by the transmitter to obtain the original unencrypted information.

The Final Office Action erroneously concludes that "Weiss teaches a method of determining a packet order of a received packet" (Final Office Action at page 16). In contrast, Weiss merely discloses an encryption and error detection technique that relies on synchronized data block counters maintained at both the transmitter and the receiver (see Weiss, at FIG. 3). Weiss neither teaches nor suggests a procedure for determining the packet order of a received packet as recited in claim 7. Should the Office decide to maintain this rejection, Applicant respectfully requests a specific citation to those sections of Weiss that support this allegation.

In addition, Weiss neither teaches nor suggests "applying at least one packet ordering mask to the received packet in a known order from a list of packet ordering masks to find a current packet ordering mask that was previously used to mask the received packet" as recited in claim 7 (emphasis added). Even assuming, arguendo, that the Office equates the output of

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Weiss' DES block 327 (which is utilized to decrypt the received encrypted data blocks) to the packet ordering mask recited in claim 7, the output of the DES block 327 is not utilized in the manner recited in claim 7. In this regard, the output of the DES block 327 must be synchronized with the counterpart DES block 313 utilized by the transmitter in the Weiss system. This synchronization requirement obviates the need to have the Weiss system perform any packet ordering functions, as recited in claim 7.

The Final Office Action correctly concludes that Weiss does not disclose a number of limitations recited in independent claim 7. The Final Office Action, however, cites Dent as a reference that allegedly addresses some of the shortcomings of Weiss. For the reasons discussed above in connection with the §102 rejection of independent claim 7, Dent neither teaches nor suggests the additional limitations as necessary to support this rejection. In particular, the scrambling/descrambling masks in the Dent system are applied to signals as a whole, and the different masks in the Dent system are not applied one at a time to individual packets. In other words, the masks in the Dent system are not packet ordering masks as recited in claim 7. Consequently, the proposed combination of Weiss, Dent, and Gross does not teach or suggest all of the limitations of independent claim 7. For at least the same reasons, the proposed combination of Weiss, Dent, and Gross does not teach or suggest all of the limitations of claims 8-10 (which variously depend from claim 7).

Further, Applicant submits that a *prima facie* case of obviousness has not been established because there is no motivation to combine Weiss with Dent. First, Weiss is not concerned with scrambling masks as disclosed by Dent. Second, Dent discloses application of descrambling masks during decoding based on ordered signal strength. At best, Weiss is directed to comparing a computed block error detection code with a received copy of an error detection code (Weiss, at Column 6, Lines 29-39 and Column 11, Lines 45-57). Any hypothetical combination of Weiss with Dent results in an inefficient or non-optimal coding technique because of the use of both CRC and scrambling masks.

For at least the above reasons, claims 7-10 are not unpatentable over the proposed combination of Weiss in view of Dent and further in view of Gross. Therefore, Applicant requests the withdrawal of the §103 rejection of claims 7-10.

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Claims 11, 12, 14, and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Weiss in view of Dent. Applicant traverses this rejection.

The Final Office Action correctly concludes that Weiss does not disclose a number of limitations recited in claims 11, 12, 14, and 15. The Final Office Action, however, cites Dent as a reference that allegedly addresses the shortcomings of Weiss. Applicant disagrees with this approach.

Amended independent claim 11 recites a step of "setting a temporary packet ordering mask equal to a next packet ordering mask in a list of packet ordering masks, the list of packet ordering masks having a known order indicating an order of packet transmission." Dent discloses using a different binary mask, or scrambling mask, to scramble each block-coded information signal. The same scrambling mask is used at the receiver to descramble the information signal from a composite signal. The scrambling masks are ordered based on the signal strength of a respectively assigned coded information signal and are selected to minimize errors due to interference from overlapping signals, such as based on auto- and cross-correlation properties (Dent, at Column 3, Lines 7-13). However, as mentioned previously, the scrambling masks disclosed by Dent do not have an order that indicates an order of packet transmission as recited in amended independent claim 11.

Moreover, Applicant submits that neither Weiss nor Dent mention the step of "setting a temporary packet ordering mask equal to a next packet ordering mask in a list of packet ordering masks" as recited in amended claim 11. Weiss discloses appending to each data block an error detection code which is calculated from the encrypted data block and a sequence number generated by a local counter. The sequence number is appended to the data but not actually transmitted or stored with the encrypted data and error correction code (Weiss, at Column 5, Lines 9-17) and as such does not establish any order of masks. At the receiving end, the Weiss system appends to each received data block a sequence number derived from a local counter, and calculates a new error detection code for comparison with the received error detection code. Weiss is silent regarding ordering masks, Dent mentions scrambling masks in the context of signal strength, but neither reference discloses the aforementioned limitation of claim 11.

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Further, Applicant submits that a *prima facie* case of obviousness has not been established because there is no motivation to combine Weiss with Dent, as explained in the immediately preceding section relating to claims 7-10.

For at least the above reasons, claims 11, 12, 14, and 15 are not unpatentable over the proposed combination of Weiss in view of Dent. Therefore, Applicant requests the withdrawal of the §103 rejection of claims 11, 12, 14, and 15.

Claim 13 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Weiss in view of Dent and further in view of Gross. Applicant traverses this rejection.

Claim 13 depends from claim 12, which depends from independent claim 11. Claims 11 and 12 were rejected under §103 as being unpatentable over the combination of Weiss and Dent (see the immediately preceding discussion of claims 11, 12, 14, and 15). Consequently, for at least the same reasons discussed above, claim 13 is not unpatentable over Weiss in view of Dent and further in view of Gross.

In conclusion, for the reasons given above, all claims now presently in the application are believed allowable and such allowance is respectfully requested. Should the Examiner have any questions or wish to further discuss this application, Applicants request that the Examiner contact the undersigned attorney at (480) 385-5060.
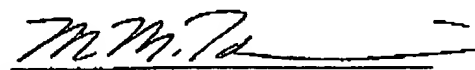
If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

Dated: November 17, 2005   By: _____

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